Artificial intelligence in recommender systems

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Abstract

Recommender systems provide personalized service support to users by learning their previous behaviors and predicting their current preferences for particular products. Artificial intelligence (AI), particularly computational intelligence and machine learning methods and algorithms, has been naturally applied in the development of recommender systems to improve prediction accuracy and solve data sparsity and cold start problems. This position paper systematically discusses the basic methodologies and prevailing techniques in recommender systems and how AI can effectively improve the technological development and application of recommender systems. The paper not only reviews cutting-edge theoretical and practical contributions, but also identifies current research issues and indicates new research directions. It carefully surveys various issues related to recommender systems that use AI, and also reviews the improvements made to these systems through the use of such AI approaches as fuzzy techniques, transfer learning, genetic algorithms, evolutionary algorithms, neural networks and deep learning, and active learning. The observations in this paper will directly support researchers and professionals to better understand current developments and new directions in the field of recommender systems using AI.